

Remarks

Claims 1-12, 14-22, and 24-26 remain in the case.

The rejection of claim 1 under 35 U.S.C. 103(a) as being unpatentable over Watson (U.S. Pub. No. 20030182041) in view of Fukatani (U.S. Pat. No. 5765118) is respectfully traversed.

Claim 1 recites a method for estimating the propensity of a vehicle to rollover. The lateral kinetic energy of the vehicle is determined in response to the longitudinal velocity and the vehicle side slip angle. A potentiality rollover index is then determined in response to the lateral kinetic energy and the lateral acceleration. The present invention provides a method that estimates the propensity of the vehicle to rollover thereby allowing counter measures to be taken for preventing the rollover.

Watson describes a vehicle rollover detection system that senses when a vehicle has exceeded a threshold rollover state (i.e., is in a vehicle rollover occurrence) and deploys safety restraints in response thereto for preventing injury to vehicle occupants during the rollover. Watson determines the rotational kinetic energy of the vehicle for detecting the rollover occurrence. The rotational kinetic energy determined as a function of the angular velocity is measured by an angular rate sensor. Watson describes using the filtered angular velocity to determine the roll state of the vehicle, which the present invention does not utilize. In addition, the kinetic energy is compared to the potential energy to determine if vehicle has exceeded the threshold state. The determination of potential energy is based on the assumption that the lateral acceleration is constant, a condition which does not hold for the present invention.

The method recited in Claim 1 uses linear forces (i.e., longitudinal velocity, vehicle slide slip angle, lateral kinetic energy, and lateral acceleration) to estimate the propensity of the vehicle to rollover for preventing vehicle rollover in comparison to Watson which utilizes the rotation forces to detect an actual rollover and deploy safety restraint devices. In addition, the lateral

acceleration which is used to determine the potentiality index is not constant.

In Watson, the lateral acceleration is assumed constant.

The addition of Fukatani fails to strengthen the rejection. Fukatani describes a method of estimating a movement state variable in the turning of a vehicle. The office action states Fukatani teaches an algorithm for determining a lateral speed and further kinetic of a vehicle in response to the vehicle longitudinal velocity and vehicle side slip angle. However, Fukatani only describes determining the lateral speed from the product of the lateral slip angle and the real forward speed. Kinetic energy is neither discussed nor suggested by Fukatani. Since lateral speed is not equal to kinetic energy, Fukatani cannot be said to teach or suggest determining kinetic energy in response to longitudinal velocity or vehicle slip angle. The combined references fail to teach or suggest each limitation of claim 1, let alone the invention as a whole.

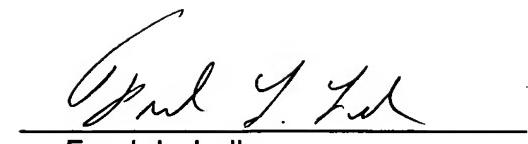
Furthermore, there is no motivation, either explicitly or inherently, to combine the references that suggest the desirability of the combination for teaching the limitations of claim 1. Watson only describes using rotational energy to determine that a rollover has occurred. Fukatani describes a method of estimating the movement state variable in the cornering of a vehicle and makes no reference to estimating the propensity of a vehicle to rollover or any rollover occurrence. There is no motivation found in either of these references that would enable one skilled in art to combine such references to teach or suggest the limitations of the claim 1.

Since Fukatani and Watson, either individually or in combination, fail to teach or suggest a method for estimating a propensity of a vehicle to rollover so that corrective actions can be taken to prevent the rollover, claim 1 is therefore allowable.

In view of the foregoing amendment and remarks, all pending claims are in condition for allowance. Favorable action is respectfully solicited.

Respectfully submitted,

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